What is claimed is:

1. A sustained release composition comprising a cationic active agent, and a polyanionic water-soluble complexing polymer of sufficient molecular weight that it forms a gel when mixed with said active agent.

2. A composition as in claim 1 further comprising calcium sulfate.

3. A composition as in claim 1 further comprising a mixture of phosphates, which includes tricalcium phosphate.

4. A composition as in claim 1 further comprising hydroxyl apatite.

5. A composition as in claim 1 wherein said complexing polymer is at least two complexing polymers of different molecular weight.

6. A composition as in claim 1 wherein said active agent is an anti-infective selected from the group consisting of gentamicin, azithromycin, clarithromycin, doxycycline, minocycline and lincomycin, clindamycin, amikacin, vancomycin, tobramycin, nystatin, and amphotericin B.

7. A composition as in claim 1 wherein said active agent is an anesthetic selected from the group consisting of dibucaine, tetracaine, procaine, etidocaine, bupivacaine, mepivacaine, and prilocaine.

8. A composition as in claim 1 wherein said active agent is an opioid/analgesic selected from the group consisting of fentanyl, sufentenil, morphine, methadone, etorphine, levorphanol, levallorphan, butorphenol, buprenorphine, oxycodone, hydromorphone, propoxyphene, naloxone, naltrexone, nalorphine, nalbuphine, nalmefene, codeine, oxymorphone, and dermorphine.

9. A composition as in claim 1 wherein said active agent is an anti-tumor agent.

10. A composition as in claim 1 wherein said active agent is a CNS agent selected from the group consisting of acepromezine, prochlorperazine, clomipramine, ondansetron, sertraline, doxazosine, chlorpromazine, and atropine.

11. A composition as in claim 1 wherein said complexing polymer is selected from the group consisting of dextran sulfate, carboxymethylcellulose, and pentosan sulfate.

12. A composition as in claim 1 wherein said complexing polymer is dextran sulfate (Na).

13 A composition as in claim 12 wherein said complexing polymer is dextran sulfate (Na) of molecular weight 500,000 or higher.

14. A composition as in claim 1 wherein said complexing polymer is carboxymethylcellulose.

15. A composition as in claim 1 wherein said complexing polymer is L-carboxymethylcellulose.

16. A composition as in claim 1 wherein said complexing polymer is M-carboxymethylcellulose.

17. A method of treating an infection in a mammal comprising administering to said mammal a sustained release composition comprising a cationic anti-infective and a polyanionic water soluble complexing polymer of sufficient molecular weight that it forms a gel with said anti-infective.

18. A method of treating bone sepsis, joint sepsis, an infected joint prosthesis, a diabetic foot infection, or periodontal disease, in a mammal comprising administering by injection to said mammal a composition comprising active agent selected from the group consisting of gentamicin, azithromycin, clarithromycin, doxycycline, minocycline and lincomycin, clindamycin, amikacin, vancomycin, tobramycin, nystatin, and amphotericin B. and a complexing polymer of sufficient molecular weight that it forms a gel with said anti-infective.

19. A method of systemically treating an infection in a mammal comprising administering subcutaneously to said mammal a composition comprising active agent selected from the group consisting of gentamicin, azithromycin, clarithromycin, doxycycline, minocycline and lincomycin, clindamycin, amikacin, vancomycin, tobramycin, nystatin, and amphotericin B and a complexing polymer.

20. A method of regionally blocking nerves or treating localized pain in a mammal comprising administering by injection to said mammal a composition comprising an anesthetic selected from the group consisting of dibucaine, tetracaine, procaine, prilocaine, etidocaine, bupivacaine, mepivacaine, and a complexing polymer.

21. A method of treating pain in a mammal comprising administering to said mammal a composition comprising an active agent selected from the group consisting of oxycodone, morphine, fentanyl, sufentanil, and hydromorphone, and a complexing polymer.

22. A method as in claim 21 wherein said complexing polymer is at least two complexing polymers of different molecular weight.

23. A method of treating drug addiction in a mammal comprising administering to said mammal a composition comprising an active agent selected from the group consisting of methadone, buprenorphine, naloxone, and naltrexone, and a complexing polymer.

24. A method of treating cancer in a mammal comprising administering to said mammal a sustained release composition comprising a cationic anti-tumor agent and a polyanionic water soluble complexing polymer.

25. A molded prosthesis comprising a prosthesis including a sustained release composition comprising a cationic active agent selected from the group consisting of gentamicin, azithromycin, clarithromycin, doxycycline, minocycline and lincomycin, clindamycin, amikacin, vancomycin, tobramycin, nystatin, and amphotericin B., and a polyanionic water soluble complexing polymer of sufficient molecular weight that it forms a gel with said active agent.

26. A method of producing a sustained release gel composition comprising mixing a cationic active agent and a polyanionic water soluble complexing polymer of sufficient molecular weight that it forms a gel with said active agent.

27. A method of producing a sustained release composition comprising mixing a cationic active agent and a polyanionic water soluble complexing polymer of sufficient molecular weight that it forms a gel with said active agent, drying the gel, grinding the dried gel to a powder, and suspending the powder in a suspending agent.

28. A method of producing a sustained release composition comprising mixing a cationic active agent and a polyanionic water soluble complexing polymer of sufficient molecular weight that it forms a gel with said active agent, and adding calcium sulfate to the gel.

29. A method as in claim 28 wherein the calcium sulfate is calcium sulfate hemihydrate.

30. A method as in claim 28 wherein the calcium sulfate is calcium sulfate dihydrate.

31. A composition comprising a mixture of at least two polymer-drug complexes each of which contains a distinct active ingredient.

32. A composition comprising a solid polymer drug complex suspended in a liquid polymer-drug complex.

33. A composition comprising a polymeric anion with a poorly soluble cationic drug complex of low molecular weight.

34. A composition comprising a neutral drug entrapped within a cross-linked reaction product of a polymeric anion and a cation cross-linking agent.